Missouri Department of Natural Resources

PUBLIC NOTICE

DRAFT MISSOURI STATE OPERATING PERMIT

DATE: June 2, 2006

In accordance with the state Clean Water Law, Chapter 644, RSMo, Clean Water Commission regulation 10 CSR 20-6.010, and the federal Clean Water Act, the applicants listed herein have applied for authorization to either discharge to waters of the state or to operate a no-discharge wastewater treatment facility. The proposed permits for these operations are consistent with applicable water quality standards, effluent standards and/or treatment requirements or suitable timetables to meet these requirements (see 10 CSR 20-7.015 and 7.031). All permits will be issued for a period of five years, unless noted otherwise in the Public Notice for that discharge.

On the basis of preliminary staff review and the application of applicable standards and regulations, the Missouri Department of Natural Resources (MDNR), as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions. The proposed determinations are tentative pending public comment.

Persons wishing to comment on the proposed permit conditions are invited to submit them in writing to the Department of Natural Resources, Southeast Regional Office, 2155 N. Westwood Blvd., Poplar Bluff, Missouri, 63901, ATTN: Gary L. Gaines, P.E., Regional Director. Please include the permit number in all comment letters.

Comments should be confined to the issues relating to the proposed action and permit(s) and the effect on water quality. The MDNR may not consider as relevant comments or objections to a permit based on issues outside the authority of the Clean Water Commission, (see Curdt v. Mo. Clean Water Commission, 586 S.W.2d 58 Mo. App. 1979).

All comments must be postmarked by July 2, 2006 or received in our office by 5:00 p.m. on July 5, 2006. The requirement of a signed document makes it impossible to accept email comments for consideration at this time. Comments will be considered in the formulation of all final determinations regarding the applications. If response to this notice indicates significant public interest, a public meeting or hearing may be held after due notice for the purpose of receiving public comment on the proposed permit or determination. Public hearings and/or issuance of the permit will be conducted or processed according to 10 CSR 20-6.020.

Copies of all draft permits and other information including copies of applicable regulations are available for inspection and copying at DNR’s website, http://www.dnr.mo.gov/env/wpp/wpcp-pn.htm, or at the Department of Natural Resources, Southeast Regional Office, 2155 N. Westwood Blvd., Poplar Bluff, Missouri, 63901, between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday.

Public Notice Date: June 2, 2006 Permit Number: MO-0001171 Southeast Regional Office	
FACILITY NAME AND ADDRESS	**NAME AND ADDRESS OF OWNER**
AECI, New Madrid Power Plant PO Box 156 New Madrid, MO 63869	Associated Electric Cooperative, Inc. (AECI) PO Box 754 Springfield, MO 65801
RECEIVING STREAM & LEGAL DESCRIPTION	**TYPE OF DISCHARGE**
See below	Industrial, construction modification

Plans and specifications for this facility have been reviewed by the Department of Natural Resources. The design engineer, a registered Missouri professional engineer, has certified that the plans and specifications meet all requirements of 10 CSR 20-Chapter 8 Waste Treatment Design.

Outfalls #001, #002 & #004 – Mississippi River, Sec. 29, T22N, R14E, New Madrid County

Outfall #003 – Mississippi River, Section 33, T22N, R14E, New Madrid County

Outfall #005 – Tributary to Portage Bayou (Mississippi River), Section 29, T22N, R14E, New Madrid County

Outfall #006 – Tributary to Portage Bayou, Section 6, T21N, R14E, New Madrid County

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0001171
Owner:	Associated Electric Cooperative, Inc. (AECI)
Address:	2814 South Golden, Springfield, MO 65801
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	AECI, New Madrid Power Plant
Address:	PO Box 154, New Madrid, MO 63869
Legal Description:	See page 2
Receiving Stream:	See page 2
First Classified Stream and ID:	See page 2
USGS Basin & Sub-watershed No.:	See page 2

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

See page 2

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

Effective Date

Doyle Childers, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

Expiration Date

Gary L. Gaines, P.E., Director, Southeast Regional Office

FACILITY DESCRIPTION (continued)

Outfall #001 – Industrial - SIC #4911
Condenser Cooling Water.
Design flow is 550 MGD per day.
Actual flow is 483.839 MGD.
Legal Description: SE ¼, SE ¼, Sec. 29, T22N, R14E, New Madrid County
Receiving Stream: Mississippi River (P)
First Classified Stream and ID: Mississippi River (P) (03152)
USGS Basin & Sub-watershed No.: (08010100-020005)

Outfall #002 – Industrial - SIC #4911
Condenser Cooling Water.
Design flow is 550 MGD.
Actual flow is 413.54 MGD.
Legal Description: SE ¼, SE ¼, Sec. 29, T22N, R14E, New Madrid County
Receiving Stream: Mississippi River (P)
First Classified Stream and ID: Mississippi River (P) (03152)
USGS Basin & Sub-watershed No.: (08010100-020005)

Outfall #003 – Industrial - SIC #4911
Fly ash settling pond/Fly ash landfill leachate and contact stormwater flows (1.05 MGD based on 25 year storm event).
Design flow is 38 MGD.
Actual flow is 8.05 MGD.
Legal Description: SE ¼, SE ¼, Sec. 33, T22N, R14E, New Madrid County
Receiving Stream: Mississippi River (P)
First Classified Stream and ID: Mississippi River (P) (03152)
USGS Basin & Sub-watershed No.: (08010100-020005)

Outfall #004 – Industrial - SIC #4911
Boiler slag dewatering pond.
Design flow is 7.5 MGD.
Actual flow is 1.84 MGD.
Legal Description: SE ¼, SE ¼, Sec. 29, T22N, R14E, New Madrid County
Receiving Stream: Mississippi River (P)
First Classified Stream and ID: Mississippi River (P) (03152)
USGS Basin & Sub-watershed No.: (08010100-020005)

Outfall #005 – Industrial - SIC #4911
Stormwater runoff from plant site.
Design flow is 4.19 MGD.
Actual flow is dependent upon precipitation.
Legal Description: SE ¼, SE ¼, Sec. 29, T22N, R14E, New Madrid County
Receiving Stream: Tributary to Portage Bayou (U)
First Classified Stream and ID: Mississippi River (P) (03152)
USGS Basin & Sub-watershed No.: (08010100-020005)

Outfall #006 – Industrial – SIC #4911
Non contact stormwater runoff from fly ash landfill site.
Design flow is 1.42 MGD based on 25 year storm event.
Actual flow is dependent upon precipitation.
Legal Description: SE ¼, NW ¼, Sec 6, T21N, R14E, New Madrid County
Receiving Stream: Tributary to Portage Bayou (u)
First Classified Stream and ID: Mississippi River (P) 03152)
USGS Basin and Sub-Watershed No.: (08010100-020005)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfalls #001 & #002						
Flow	MGD	*		*	once/day	24 hr. total
Heat	BTU/SEC	Note 1		Note 1	once/day	grab
Temperature	°C(°F)	*		*	once/day	grab
Outfalls #003 & #004						
Flow	MGD	*		*	once/day	24 hr. total
Total Suspended Solids (Note 2)	mg/L	100		30	once/month	24 hr. composite
Oil & Grease	mg/L	20		15	once/month	grab
pH - Units	SU	**		**	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE _____.						
Outfall #005						
Flow	MGD	*		*	once/year in September	instantaneous estimate
Total Suspended Solids	mg/L	100			once/year in September	24 hr. composite
Oil & Grease	mg/L	20		15	once/year in September	grab
pH – Units	SU	**		**	once/year in September	grab
MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE _____.						
Outfall #003						
Whole Effluent Toxicity (WET) Test	% survival	See Special Conditions			once/5 years in Sept, 2003	24 hr composite
MONITORING REPORTS SHALL BE SUBMITTED ONCE/5 YEARS; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Outfall #006						
Flow	MGD	*		*	once/month	24 hr estimate
Settleable Solids	ml/l/hr	2.5		1.5	once/month	grab
Ph - Units	SU	**		**	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE _____						

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Part I STANDARD CONDITIONS DATED October 1, 1980, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

* Monitoring requirement only.

** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.

Note 1 – Background river temperature(at Thebes)during summer critical periods were highest in July (85.5 °F; see Appendix). Allocations were developed for the critical periods per stipulations outlined in 10 CSR 20-7.031(4)(D)5. For the critical period, temperatures greater than 89°F shall not be exceeded more than 1% of the time and those exceedences shall at no time cause temperatures to exceed 92°F. Allocations developed during critical periods are believed to be protective throughout the year.

$$Q = m * c_s * (Tc - Ta)$$

Q = BTU/sec
m = mass/sec, 62.4 lbs./ft^3
= 23,300*62.4
C_s = specific heat of water
= 1 BTU $°F^{-1}$ $lb.^{-1}$
Tc = Temperature Criteria (89°F, 92°F)
Ta = Ambient Temperature (85.5°F)

Scenario #1. The following thermal allocation can be exceeded no more than 1% of any calender year (3 days):

= (23,300*62.4)*1*(89°F - 85.5°F)
= **5,088,720 BTU/sec or 18,319,392,000 BTU/Hour**

Scenario #2. For those days when 5,016,024 BTU/sec may be exceeded, the following limitation represents a thermal maximum that can at no time be exceeded:

= (23,300*62.4)*1*(92°F - 85.5°F)
= **9,450,480 BTU/sec or 34,021,728,000 BTU/Hour**

Note 2 – Intake Total Suspended Solids values may be used to calculate “net” limitations, however, the permittee must continue to maintain the ash pond system for adequate retention time for settling. River solids present in intake water are “treated” in the ash pond system, but treatment levels are dependent on concentration and types of river solids present in intake water.

C. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri’s Water Quality Standards.
   (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri’s list of waters of the state not fully achieving the state’s water quality standards, also called the 303(d) list.

   The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

C. SPECIAL CONDITIONS (continued)

2. All outfalls must be clearly marked in the field.

3. Specific plans for chemical cleaning of boilers shall be submitted to the Department at lease 60 days prior to any such cleaning. Alternate monitoring requirements, additional effluent limitations, specific procedures and any other necessary requirements will be specified by the Department for the duration of the chemical cleaning.

4. Any pesticide discharge from any point source shall comply with the requirements of Federal Insecticide, Fungicide and Rodenticide Act as amended (7 U.S.C. 136 et. Seq.) and the use of such pesticides shall be in a manner consistent with its label.

5. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:
(a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
  (1) One hundred micrograms per liter (100 µg/L);
  (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
  (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
  (4) The level established in Part A of the permit by the Director.
(b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

6. Report as no-discharge when a discharge does not occur during the report period.

7. General Criteria. The following water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
(a) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
(b) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
(c) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
(d) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
(e) There shall be no significant human health hazard from incidental contact with the water;
(f) There shall be no acute toxicity to livestock or wildlife watering;
(g) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
(h) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

C. SPECIAL CONDITIONS (continued)

8. Whole Effluent Toxicity (WET) tests shall be conducted as follows:

SUMMARY OF WET TESTING FOR THIS PERMIT				
OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
#003	10%	once/5 years	24 hr composite	September, 2003

a. Test Schedule and Follow-Up Requirements

(1) Perform a single-dilution test in the months and at the frequency specified above.

If the effluent passes the test, do not repeat the test until the next test period. Submit results with the annual report.
If the effluent fails the test, a multiple dilution test shall be performed within 30 days, and biweekly thereafter, until one of the following conditions are met:

(a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
(b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.

(2) The permittee shall submit a summary of all test results for the test series to the WPCP, Planning Section, P.O. Box 176, Jefferson City, MO 65102 within 14 days of the third failed test. DNR will contact the permittee with initial guidance on conducting a toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE). The permittee shall submit a plan for conducting a TIE or TRE to the Planning Section of the WPCP within 60 days of the date of DNR's letter. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.

(3) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.

(4) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.

(5) In addition to the WET test summary report required in part (2), all failing test results shall be reported to DNR within 14 days of the availability of the results.

(6) All WET test results for the reporting period shall be summarized and submitted to DNR by the end of the following October. When WET test sampling is required to run over one DMR period, each DMR report shall contain information generated during the reporting period.

C. SPECIAL CONDITIONS (continued)

8. Whole Effluent Toxicity (WET)(continued)

b. PASS/FAIL procedure and effluent limitations

(1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the upstream receiving-water control sample. The appropriate statistical tests of significance will be those outlined in the most current USEPA acute toxicity manual or those specified by the MDNR.

(2) To pass a multiple-dilution test:

(a) the computed percent effluent at the edge of the zone of initial dilution, Acceptable Effluent Concentration (AEC), must be less than three-tenths (0.3) of the LC_{50} concentration for the most sensitive of the test organisms; or,
(b) all dilutions equal to or greater than the AEC must be nontoxic. Failure of one multiple-dilution test is an effluent limit violation.

c. Test Conditions

(1) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing should come from cultures reared for the purpose of conducting toxicity tests and should be cultured in a manner consistent with the most current USEPA guidelines. All test animals should be cultured as described in EPA-600/4-90/027.

(2) Test period: 48 hours at the "Acceptable Effluent Concentration" (AEC) specified above.

(3) When dilutions are required, upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.

(4) Tests should be initiated immediately after the sample is collected, but tests must be initiated no later than 36 hours after sample collection.

(5) Single-dilution tests will be run with:

(a) Effluent at the AEC concentration;
(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
(c) reconstituted water.

(6) Multiple-dilution tests will be run with:

(a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
(c) reconstituted water.

(7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.

SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless otherwise specified by MDNR, procedures should be consistent with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA/600/4-90/027.

Test conditions for Ceriodaphnia dubia:

Test duration:	48 h
Temperature:	25 ± 2°C
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (minimum)
Feeding regime:	None (feed prior to test)
Aeration:	None
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Mortality (Statistically significant difference from upstream receiving water control at $p \leq 0.05$)
Test acceptability criterion:	90% or greater survival in controls

Test conditions for (Pimephales promelas):

Test duration:	48 h
Temperature:	25 ± 2°C
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250 mL (minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Mortality (Statistically significant difference from upstream receiving water control at $p \leq 0.05$)
Test Acceptability criterion:	90% or greater survival in controls

Date of Fact Sheet: February 20, 2003 Modified: May 18, 2006
Date of Public Notice: June 2, 2006

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT
FACT SHEET

This Fact Sheet explains the applicable regulations, rationale for development of this permit and the public participation process.

NPDES PERMIT NUMBER: MO-0001171

FACILITY NAME: AECI, New Madrid Power Plant

OWNER NAME: Associated Electric Cooperative, Inc.

LOCATION: SE ¼, SE ¼, Sec. 29, T 22N, R 14E, New Madrid County, Missouri

RECEIVING STREAM: Outfalls #001, #002, #003 & #004 – Mississippi River
Outfall #005 & #006 – Portage Bayou

FACILITY CONTACT PERSON: Russell A. Rice TELEPHONE: (573) 643 2211

FACILITY DESCRIPTION AND RATIONALE

Associated Electric Cooperative,Inc, has applied for a permit modication of State Operating Permit No. MO-0001171 for the New Madrid Power Plant at New Madrid, MO to construct a monofill landfill for fly ash waste. The Power Plant is a coal fired generating station providing electrical services. The Standard Industrial Classification Code is 4911.

The application for discharge requests that the existing five (5) outfalls as described in the proposed permit remain and request that an additional outfall be added for stormwater runoff that does not contact fly ash waste surrounding the new landfill area. Outfalls 001, 002, 003, & 004, discharge directly to the Mississippi River. Outfall 005 and the proposed new outfall 006 discharge to Portage Bayou. The Department's Solid Waste Management Program will be reviewing the landfill construction standards in accordance with Chapter 260 RsMO and Regulation 10 CSR 80. Landfill leachate collection is required in the Solid Waste Rules and the associated leachate will be transported to the existing fly ash treatment system noted as Outfall 003 in this permit for further treatment and disposal.

In order to protect the beneficial uses and the water quality of the receiving streams, effluent limitations are proposed under Federal and State laws. The current department Effluent Regulations, 10 CSR 20-7.015 (2) (C), states that non-domestic water contaminant sources "shall meet the applicable control technology currently effective as published by the Environmental Protection Agency (EPA) in 40 CFR 405-571 as revised on July 1, 1987. Where there are no such standards available or applicable the department shall set specific paramenter limitations using best professional judgement." Guided by the Effluent Regulations and the Water Quality Standards, the department is proposing the limitations noted in the draft permit. Limits for the existing outfalls 001 through 005 were not changed and limits for the new outfall 006 were established using best professional judgement by utilizing similar limits established for land disturbance activities for stormwater runoff.

The proposed limitations differ from the attached Water Quality Review Sheet(WQRS), which also recommended "monitoring only" for metals and nutrients. These were not included in the permit as the analyses submitted, as part of the applications for reissuance in 1997 and 2002, did not show increases in these parameters that would justify a permit monitoring requirement. In addition, these metals and nutrients are not added as a part of the industrial process.

This permit will be modified to include one new outfall and will expire May 1, 2008 under the provisions of the original review for reissuance performed in 2003.

Missouri Department of Natural Resource
Water Pollution Control Program
Planning Section

Water Quality Review Sheet

Determination of Effluent Limits

Facility Information

FACILITY NAME: AECI New Madrid Powerplant NPDES #: MO-0001171

FACILITY TYPE/DESCRIPTION: Coal-fired Cogeneration Powerplant

ECOREGION: Miss. Lowlands (Central Irregular Plains / Mississippi Alluvial Plains) 8- DIGIT HUC: 08010100 (Osage Plains / Ozark Highlands) COUNTY: New Madrid

LEGAL DESCRIPTION: Sec. 3, T22N, R14E LATITUDE/LONGITUDE: 36.51694 / -89.56000

WATER QUALITY HISTORY: No stream surveys have been conducted at this site. No recent enforcement action.

Outfall Characteristics

OUTFALL	DESIGN FLOW (CFS)	EFFLUENT TYPE	RECEIVING WATERBODY	OTHER
001	820	Cooling Water	Mississippi River	
002	813.9	Cooling Water	Mississippi River	
003	83.7	Ash Settling Pond	Mississippi River	
004	24.8	Slag Dewatering	Mississippi River	
005	6.5	Stormwater Runoff	Portage Bayou	

Receiving Waterbody Information

WATERBODY	CLASS	7Q10(CFS)	*DESIGNATED USES	OTHER CHARACTERISTICS
Mississippi River	P	93,200	IRR, LWW, AQL-GWWF, IND,DWS, BTG	
Portage Bayou	U	0.0	N/A	

*Cool Water Fishery (CLF), Cold Water Fishery (CDF), Irrigation (IRR), Industrial (IND), Boating & Canoeing (BTG), Drinking Water Supply (DWS), Whole Body Contact Recreation (WBC), Protection of Warmwater Aquatic Life and Human Health (AQL), Livestock & Wildlife Watering (LWW)

COMMENTS: Low flow statistics from USGS gage 07022000 and 03611500 were added to determine seasonal 7Q10 flows. Summer 7Q10 flows were calculated to be 93,202 cfs while winter value were 93,193 cfs (see appendix).

MIXING CONSIDERATIONS

Mixing Zone.

Thermal Mixing Zones. Per 10 CSR 20-7.031(4)(D)6. thermal mixing zones are limited to 25% of the volume (of flow) or 25% of the cross-sectional area. Discharge cannot elevate or depress upstream temperature more than 5°F nor can a point source cause or contribute to temperatures greater than 90°F at the edge of the mixing zone.

Chemical Mixing Zones. Per 10 CSR 20-7.031(4)(A)5. 25% of stream width, cross-sectional area, flow, or length 0.25 miles.

Zone of Initial Dilution (Z.I.D.).

Thermal Z.I.D. Not applicable.

Chemical Z.I.D. 10% of the mixing zone flow, not to exceed 10 times design flow of point source. See 10 CSR 20-7.031(4)(A)5.

Permit Limits And Information

TMDL WATERSHED: (Y OR N) [Y] W.L.A. STUDY CONDUCTED: (Y OR N) [N] DISINFECTION REQUIRED: (Y OR N) [N] DISINFECTION WAIVER: (Y, N, NA) [N/A]

OUTFALL# 001 & 002. Cooling Water Discharge

WET TEST (Y OR N): Y FREQUENCY: 1/YEAR A.E.C. NOTE 1 LIMIT: 10 CSR 20-7.031(3)(I)

PARAMETER	MAXIMUM DAILY LIMIT	AVERAGE WEEKLY LIMIT	AVERAGE MONTHLY LIMIT	MONITORING FREQUENCY	SAMPLE TYPE
Flow	*	*	*	Daily	24 HOUR TOTAL
Heat (BTU/sec)	NOTE 2	NOTE 2	NOTE 2	DAILY	OPTIONAL
Temperature	*	*	*	DAILY	OPTIONAL
Total Suspended Solids (mg/l)	100		30	MONTHLY	OPTIONAL
Oil & Grease (mg/l)	15		10	MONTHLY	OPTIONAL
pH (SU)	6.0 – 9.0			MONTHLY	OPTIONAL

OUTFALL# 003 & 004. Ash Settling Pond & Slag Dewatering

WET TEST (Y OR N): Y FREQUENCY: 1/YEAR A.E.C. NOTE 1 LIMIT: 10 CSR 20-7.031(3)(I)

PARAMETER	MAXIMUM DAILY LIMIT	AVERAGE WEEKLY LIMIT	AVERAGE MONTHLY LIMIT	MONITORING FREQUENCY	SAMPLE TYPE
Flow	*	*	*	Daily	24 hour total
Temperature	*	*	*	Daily	Optional
Total Suspended Solids (mg/l)	100		30	Monthly	Optional
Settleable Solids (ml/l/hr)	1.5		1.0	Monthly	Optional
Oil & Grease (mg/l)	15		10	Monthly	Optional
pH (SU)	6 - 9			Monthly	Optional
Total Phosphorus (mg/l)	*	*	*	Quarterly	Optional
Total Kjeldahl Nitrogen (mg/l)	*	*	*	Quarterly	Optional
Ammonia-Nitrogen (mg/l)	*	*	*	Quarterly	Optional
Nitrite + Nitrate (mg/l)	*	*	*	Quarterly	Optional
Arsenic (mg/l)					Optional
Cadmium (mg/l) -Total Recoverable-	*	*	*	Quarterly	Optional
Chromium (mg/l) -Total Recoverable-	*	*	*	Quarterly	Optional
Copper (mg/l) -Total Recoverable-	*	*	*	Quarterly	Optional
Lead (mg/l) -Total Recoverable-	*	*	*	Quarterly	Optional
Mercury (mg/l) -Total Recoverable-	*	*	*	Quarterly	Optional
Nickel (mg/l) -Total Recoverable-	*	*	*	Quarterly	Optional
Silver (mg/l) -Total Recoverable-	*	*	*	Quarterly	Optional
Zinc (mg/l) -Total Recoverable-	*	*	*	Quarterly	Optional
COD (mg/l)	*	*	*	Quarterly	Optional

OUTFALL# 005. Stormwater Runoff

WET TEST (Y OR N): Y FREQUENCY: 1/YEAR A.E.C. NOTE 1 LIMIT: 10 CSR 20-7.031(3)(I)

PARAMETER	MAXIMUM DAILY LIMIT	AVERAGE WEEKLY LIMIT	AVERAGE MONTHLY LIMIT	MONITORING FREQUENCY	SAMPLE TYPE
Flow	*	*	*	1/Event	Instant. Est.
Temperature	*	*	*	1/EVENT	Optional
Total Suspended Solids (mg/l)	100			1/EVENT	Optional
Settleable Soldids (ml/l/hr)	1.5		1.0		Optional
Oil & Grease (mg/l)	15		10	1/EVENT	Optional
pH (SU)	6.5 – 9.0			1/EVENT	Optional

Receiving Water Monitoring Requirements

No in-stream monitoring is recommended at this time.

Derivation and Discussion of Limits

Note 1. A.E.C. Values

A.E.C. values and conditions contained within the existing operating permit are protective of designated uses.

OUTFALL	A.E.C. %	FREQUENCY	MONTH
001	40%	yearly	September
002	40%	yearly	September
003	10%	yearly	September
004	10%	yearly	September
005	100%	yearly	September

Note 2. Heat Allocations

Background river temperature(at Thebes)during summer critical periods were highest in July (85.5 °F; see Appendix). Allocations were developed for the critical periods per stipulations outlined in 10 CSR 20-7.031(4)(D)5. For the critical period, temperatures greater than 89°F shall not be exceeded more than 1% of the time and those exceedences shall at no time cause temperatures to exceed 92°F. Allocations developed during critical periods are believed to be protective throughout the year.

$$Q = m*c_s*(Tc - Ta)$$

Q = BTU/sec
m = mass/sec, 62.4 lbs./ft^3
= 23,300*62.4
C_s = specific heat of water
= 1 BTU $°F^{-1}$ $lb.^{-1}$
Tc = Temperature Criteria (89°F, 92°F)
Ta = Ambient Temperature (85.5°F)

Scenario #1. The following thermal allocation can be exceeded no more than 1% of any calender year (3 days):

= (23,300*62.4)*1*(89°F – 85.5°F)

= **5,088,720 BTU/sec or 18,319,392,000 BTU/Hour**

Scenario #2. For those days when 5,016,024 BTU/sec may be exceeded, the following limitation represents a thermal maximum that can at no time be exceeded:

= (23,300*62.4)*1*(92°F - 85.5°F)
= **9,450,480 BTU/sec or 34,021,728,000 BTU/Hour**

Outfalls 001 & 002

- ✓ **TSS, pH, Oil & Grease**. See 10 CSR 20-7.015

Outfall 003 & 004

- ✓ **TSS.** Carryover existing limitation
- ✓ **pH, Oil & Grease, Settleable Solids**. See 10 CSR 20-7.015

Outfall 005

- ✓ **TSS.** Carryover existing limitation
- ✓ **pH, Oil & Grease, Settleable Solids**. See 10 CSR 20-7.015

Reviewer: Chris Zell Unit Chief: Mohsen Dkhili
Date: 09-18-2002

Monitoring and effluent limits contained within this document have been developed in accordance with EPA guidelines using the best available data and are believed to be consistent with Missouri's Water Quality Standards and Effluent Regulations. If additional water quality data or anecdotal information are available that may affect the recommended monitoring and effluent limits, please forward these data and information to the author.

Appendix A

Low Flow Statistics

Station ID	Station Name	Period of Record	7Q10 (cfs) -Summer-	7Q10 (cfs) -Winter-
7022000	Mississippi River at Thebes, Il	1934 - 2000	60030.875	47418.848
3611500	Ohio River at Metropolis, Il	1929 - 2001	33171.879	45774.895
	Near New Madrid		**93202.754**	**93193.743**

Appendix B

Ambient Data